

CHAPTER 16

ENVIRONMENTAL POLLUTION CONTROL

Environmental pollution results from chemical, physical, or biological agents in the water, ground, or air that alter the natural environment. Pollution adversely affects human health, plant life, fish, and wildlife. Pollution can disintegrate nylon line, crumble masonry, corrode steel, and darken the skies. Most important is the damage to vegetation, human illness, and loss of productivity. Most pollution can be prevented, or slowed down, if people control the amount of foreign matter they put into the environment.

This chapter briefly covers ways to prevent water, ground, and air pollution on the jobsite. It also describes the means by which the Utilitiesman can help prevent, control, and clean up the pollution.

WATER AND GROUND POLLUTION

Other than creating a fire hazard, oil and other petroleum-related products pose many possible pollution threats when spilled in the water, dumped into the storm or sanitary sewer system, or spilled on the ground. Oil products on the ground infiltrate and contaminate surface water supplies with the groundwater runoff caused by rain. Oil products dumped or carried into a storm or sanitary sewer are also potential explosion hazards.

Oily wastewater from boiler rooms, banks of walk-in refrigeration units, and motor pool operations is caused by the following:

- improper handling and storage of new and waste oil,

- equipment and vehicle washing operations, and

- various other maintenance activities that generate liquid waste or wastewater that must be stored or treated.

An oil slick on the surface of the water blocks the flow of oxygen from the atmosphere into the water. This is harmful to fish, other aquatic life, and other sewage treatment facilities. If the fish do not die from the oil coating on their gills, or from eating the oil or oil-laden food, their flesh becomes tainted and is no longer fit for human consumption. Other than harming aquatic life, drinking water can become contaminated. Drinking water from wells and surface storage facilities are treated with chemicals to rid the water of harmful bacteria. However, no amount of treatment can rid a system of contamination from waste oil products. The system must be abandoned.

As a supervisor, your concern should be to prevent oil in the shop from draining into storm sewers and surface drainage systems. During pipe-threading operations, you should provide catch pans and absorbent material to soak up spilled oil. NEVER wash spilled oil or fuels down a drain or sewer unless an immediate fire hazard exists and an oil-water separator is connected to the discharge line. To clean up a spill, you should sprinkle absorbent material on the spill, sweep it up, and place it in an approved EPA container. Containers are disposed of through the Defense Reutilization Marketing Office

(DRMO). When this is not possible, the containers must be disposed of through a government-approved contractor or in a sanitary landfill approved by local government authorities.

Waste oils, filters, and contaminated fuel should be collected and disposed of properly. Most naval activities collect and dispose of waste oil periodically through a contractor who may burn it in a boiler plant or in a heating system. Naval supply fuel farms usually have the means to dispose of waste oils properly.

You will see contaminated water draining from the Equipment Operator's washrack every day. Work closely with the person in charge of the washrack to ensure that this wastewater is treated and not discharged into the storm sewer. Provisions must be made for pretreating or separating oil products and cleaning solvents used at the washrack.

Other than preventing oil pollution from vehicle and base equipment operation, Seabees are being considered for use in beach cleanup during major oil spill disasters. In case of a regional or national disaster from a major oil spill, this new manpower capability can be used very effectively by local commanders. A well-trained Seabee team can form the nucleus of a large-scale beach cleanup exercise team by using qualified personnel and heavy equipment.

AIR POLLUTION

You should be aware of the work conditions that cause air pollution and of the efforts required to reduce or correct the problem.

When incomplete combustion occurs in boilers, space heaters, and stoves, the unburned hydrocarbons and various other fuel components combine chemically to form by-products. Many of these by-products are harmful when emitted into the environment.

These by-products that affect the air are carbon monoxide, particulate matter, sulphur oxides, unburned hydrocarbons, nitrogen oxides, and lead. The most effective means of controlling air pollution from incomplete fuel combustion is to maintain the equipment properly and frequently. In this way, the equipment is operating at an optimal fuel and oxygen mixture. Another alternative, not always under your control, is to use only the best grade of fuel. This fuel contains low particulate matter, low water and sulphur content, and few contaminants.

ASBESTOS

Asbestos dust is another air pollutant that you must be knowledgeable of and concerned with in the installation, maintenance, and removal of asbestos material from a construction site.

Asbestos is a fibrous material that can be woven like wool. Through a variety of processes, asbestos can be turned into thousands of construction products. Asbestos has been used by humans for over 2,500 years. It was not until the 1800s that asbestos was determined to be a health hazard. In the 1900s, asbestos was discovered to be the main cause of asbestosis (a generic term for a wide range of asbestos-related disorders) and mesothelioma. Mesothelioma at one time was a very rare form of lung cancer. It is presently occurring much more frequently among people exposed to asbestos dust particles.

There are three terms associated with asbestos dust particle size that you will encounter. These terms are *micron*, *nanometer*, and *angstrom*. To give you an idea of their size, in 1 meter there are 1 million microns, 1 billion nanometers, and 10 billion angstroms.

It was not until the advent of the transmission electron microscope and the scanning electron microscope in the latter part of the 1950s that the true size (200 to 250 angstroms) of an asbestos particle was discovered. Air that appears dust-free may contain millions of disease-producing asbestos dust particles. These minuscule particles cannot be seen by the naked eye and can remain suspended in the air for months. In working to solve this problem, you must take air samples to ascertain the severity of the situation. The air must be scrubbed with a special air filtration machine to remove the particles.

Naval guidance for asbestos handling, demolition, and disposal are covered by OPNAVINST 5100.23. However, you should also learn the local laws and restrictions pertinent to the locale in which you work. These federal, state, and local laws are important. In an overseas location, the laws of the host country must be researched and clearly understood in the construction planning phase. It is inevitable that somewhere in the disposal cycle, transporting of this type of material to a disposal site will take place over roads not directly under Navy control.

Always research the laws governing asbestos. If you are continually involved with asbestos, you need to stay informed of current

regulations and laws because they are constantly changing and being updated.

PESTICIDES

There are also many chemicals and pesticides that release harmful and deadly fumes into the air—for example, chlorine gas. It is important for you to become familiar with all of the materials used by shop personnel within your jurisdiction. Normally, toxic substances have warning labels attached to them. Once the chemicals being used are identified, you can obtain supplemental information from the unit environmental protection office or from the local safety office.

REFRIGERANTS

Scientists have determined that chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are linked to the depletion of the earth's ozone layer. In response to this environmental damaging threat, CFCs and HCFCs are being phased out of production. Additionally, the use and handling of refrigerants that contain CFCs and HCFCs must comply with the EPA Clean Air Act of 1990. Naval guidance may be found in OPNAVINST.5090.2, *Management of Ozone Depleting Substances*. This instruction provides policies, responsibilities, and guidance with respect to Navy actions for elimination of ozone-depleting substances. As a supervisor, ensure that shop personnel working with CFCs and HCFCs are **licensed, trained properly with the current techniques of using and handling refrigerants, and aware of EPA and Navy guidance on handling CFCs and HCFCs.**

